

Editorial

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PAM Review

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This is the second issue of PAM Review, the peer-reviewed, class specific student research journal of the School of Mathematical and Physical Sciences at the University of Technology Sydney. The student journal was first introduced into the subject Energy Science and Technology (68412) in 2014 to allow for a practical student centered, authentic learning experience that is exciting and challenging and helps to facilitate desired graduate outcomes. Energy, Science and Technology is a one-semester subject (class) that covers the thermodynamics of macroscopic and microscopic processes in the context of energy production, energy saving and related applications. This subject is open to students in science as well as engineering.

The compilation of this research journal issue gives students an authentic, practical learning experience in applying scientific methods to produce a meta-study research paper that can be more than just a literature review. The group work has been designed to create an environment similar to the creation of a real scientific publication, including: gaining expertise in an unknown topic within a short period of time; consulting scientific databases; reading peer-reviewed scientific papers and extracting relevant information; formulating an aim of interest for the meta-study; writing a paper in a prescribed scientific publication format; working in a research team with a range of expertise; managing research and paper writing workloads within a team; acting as a peer-reviewer for other group papers; assessing papers according to prescribed peer-review guidelines; completing the meta-study paper and its submission and the peer-review process within the journal's publication timeline.

Students' overall view on their learning experience in this Energy Science and Technology research journal project are shown in Figure 1.

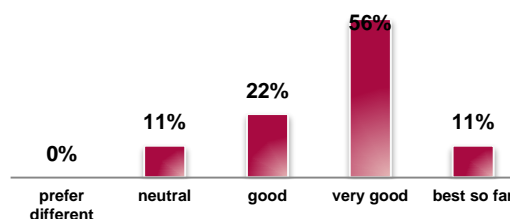


Figure 1

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While the lectures cover the theoretical, thermodynamics related background of power generation as well as related thermodynamics at the microscopic level, group projects have been introduced for students to research state of the art practical realisations of power generation with the opportunity to produce some original research outcomes. Students choose from a range of power generation systems for their project or propose a different system they are interested in. The idea behind this open project theme approach is that students will find it a more enjoyable learning experience if they study a project that they are really interested in. In our first round with this approach last year, students choose to select from a range of suggested power generation systems (coal fired, fusion, nuclear, wind, biofuel). Surprisingly, the majority of students (81%) selected nuclear physics related projects (fusion/nuclear power), a topic area that is not taught at our school and was not seen as one that students would be interested in. In contrast to the previous year, the majority of students this year choose to propose their own research themes resulting in seven distinct research themes (geothermal, tri-system conversion, marine, solar concentration, biogas, fusion, thorium nuclear) compared to only three in the previous year.